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1990 ARB Consumer Products Emissions Inventory Assessment
December 18, 1997

Introduction

At the November 18-19 Consumer Products Working Group meeting, Air Resources Board (ARB) staff and members of the consumer products industry agreed to meet on January 14th to discuss the ARB's inventory data needs and possible modifications to the 1997 consumer products survey. In preparation for the January meeting, we are providing for your review a detailed breakdown of the consumer products inventory. This assessment is based on the best available data, and should be regarded as preliminary. The information is useful to identify data gaps that must be filled with the 1997 survey. Included in this assessment is a description of the basis for this inventory, a description of the attached table and our preliminary conclusions.

Basis

As a basis for the inventory assessment, we used the ARB Phase I/II surveys, the United States Environmental Protection Agency (U.S. EPA) 1990 survey and the Mid-term Measures survey. In using the U.S. EPA survey data, we first excluded industrial or agricultural products that are not consumer products under California state law. Then, the U.S. EPA survey data were prorated for California based on population, using a factor of 12 percent. For this inventory assessment, we used 1990 as the baseline year because most of the data are from 1990. Because the Mid-term Measures data were from 1995, emissions were reduced to 1990 levels using a factor of 0.93 (based on population). For this reason, the VOC emissions listed in the Comments column of the table are higher than the value in the 1990 Emissions column. Next, we compared the sales for common categories between the surveys. In cases where the surveys had different product categories, sub-categories were lumped to create common categories. The highest sales value for all common categories was used in this report, because it is unlikely that a category was over-reported once industrial/agricultural products were removed.

Inventory Table

- Category Comparisons

The table provided is based on the U.S. EPA category numbering/naming system. The U.S. EPA categories are not further subdivided and no additional categories are added with the exception of General Purpose Degreaser, which is shown as a subcategory of General Purpose Cleaner. This is because each major U.S. EPA category group has an "Other ..." category where products not falling into the listed categories are reported. A

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case in point is the Mid-term Measures category Floor Wax Stripper, which is not listed as a U.S. EPA category. Floor Wax Stripper is lumped into the “Other Hard Surface Cleaner” category. Many other product categories were lumped so direct comparisons could be made. For example, the Mid-term Measures survey split the wax and polish categories into a number of subcategories, while the U.S. EPA survey has these products in a single category. To make a direct comparison, the subcategories were combined. A note in the comments section of the table indicates which categories were combined.

- **Down-the-Drain or Combustion Factors**

The U.S. EPA survey results include a number of down-the-drain factors which have not been substantiated by experimental data. To date, down-the-drain factors have been tentatively accepted for the ethanol portion of Hand Dishwashing Soaps (4 percent emitted) and Liquid Laundry Detergents (0.44 percent emitted), and a factor for Floor Wax Strippers is under evaluation. Also, a combustion fate factor of 80 percent for Charcoal Lighter Fluids (20 percent emitted) has been accepted. Recognizing that some portion of the VOC's in the down-the-drain categories do not evaporate, two VOC emissions columns are provided in the table. The first column presents the emissions with the tentative down-the-drain factors mentioned above. The second column presents the emissions using these factors and the down-the-drain factors approved by the U.S. EPA.

- **Low Vapor Pressure Volatile Organic Compound (LVP VOC) Content**

The U.S. EPA survey did not quantify the amount of LVP VOC's in the products. Both the Mid-term Measures and Phase I/II surveys quantify the LVP VOC's, but without speciation. In categories where the U.S. EPA sales/emissions data are used, the LVP VOC emissions are estimated using LVP VOC percentages either from the Mid-term Measures data or the Phase I/II data. The LVP VOC emissions do not include adjustments for down-the-drain factors. The ARB surveys did not include many categories surveyed by the U.S. EPA, so no estimate is available for the LVP VOC's in most categories.

- **VOC Speciation**

The Mid-term Measures survey categories are the only categories for which complete VOC speciation is available. A “No” in the VOC speciation column indicates the categories which are lacking speciation data. Basically, this includes all categories not surveyed in the Mid-term Measures.

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- **Categories to be Surveyed**

Categories which staff feel should be re-surveyed show a “Yes” in the Survey column. These are primarily categories from the Phase I/II survey, for which speciation data are not available to assess reactivity, categories with emissions greater than 0.1 tons per day not included in the Mid-term Measures survey, and Mid-term Measures categories for which LVP VOC speciation is needed. A limited survey may be conducted to fill data gaps in the Mid-term Measures categories. For many categories with very low emissions, surveying may be unnecessary.

Conclusions

Using only the tentative down-the-drain factors, the 1990 VOC emissions are estimated to be 392 tons per day in California. If all of the U.S. EPA down-the-drain factors are applied along with the factors tentatively accepted by ARB, VOC emissions are 330 tons per day. This is significantly higher than the 265 tons per day presented in the SIP for 1990, and does not include the LVP VOC's. The Mid-term Measures, Phase I and II categories and aerosol paints represent 71 percent of the 1990 emissions.

By excluding categories with emissions totaling less than 0.1 ton per day, the number of categories which we feel should be surveyed is 89. Emissions from these categories represent 305 tons per day, or 78 percent of the 392 tons per day emitted in California. Including aerosol paints, the emissions are 336 tons per day, or 86 percent of the total consumer product emissions.